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## ABSTRACT

Systematic observation of teacher behavior in several classrooms of an informal British infant schools was undertaken in order to determine typical patterns of interaction between teacher and child. Among the major findings reported are the following: 1) a typical pattern of teacher behavior in which extended substantive discussions with one or a group of children are interspersed with very brief exchanges, usually child-initiated and often concerned with organization or management questions with individual children; 2) extended interactions which are dominated by questioning of the child with respect to substantive (academic), personal, and self-management aspects of the task on which he is working; and 3) brief interactions which are heavily child-initiated and play a classroom management as well as an instructional function. On the basis of these data and other reports, informal teaching styles are analyzed for their means of fulfilling critical educational functions. (Author)

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## TEACHER BEHAVIOR IN AN INFORMAL BRITISH INFANT SCHOOL

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## ABSTRACT

Systematic observation of teacher behavior in several classrooms of an "informal" British infant school was undertaken in order to determine typical patterns of interaction between teacher and child. Among the major findings reported are the following: a) a typical pattern of teacher behavior in which extended substantive discussions with one or a group of children are interspersed with very brief exchanges, usually child-initiated and often concerned with organization or "management" questions with individual children; b) extended interactions which are dominated by questioning of the child with respect to substantive (academic), personal, and self-management aspects of the tasks on which he is working; and c) brief interactions which are heavily child-initiated and play a "classroom management" as well as instructional function. On the basis of these data and other reports, informal teaching styles are analyzed for their means of fulfilling critical educational functions.

## TEACHER BEHAVIOR IN AN INFORMAL BRITISH INFANT SCHOOL

by

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This paper represents an attempt to systematically describe the behavior of the teacher in an informal, or "open" classroom. It derives from a concern with the ways in which the teacher in such a setting performs the critical functions of maintaining purposeful activity on the part of the children, directing them to tasks and activities she deems appropriate, and engaging in direct instruction of various kinds.

The data to be reported were collected in an infant school (serving five- to seven-year-olds) in a poor working class district in Southeast London. The school was an extremely "informal" one: even in the basic skill areas of mathematics and reading there were no regularly assigned lessons or scheduled activities. As a result, the total burden of instruction had to be carried by the informal and unprogrammed encounters between teacher and child (and of course, between children and between child and "material"). Thus, it provided an excellent "laboratory" in which to study the characteristics of teacher behavior in an individualized educational system in which formal statement of objectives, formal evaluation, and "programmed" materials of most kinds were not used.

I was a daily visitor in this school for a period of about five weeks. During this period, I spent varying amounts of time in most of its nine classrooms, observing and interacting with both children and teachers. In some classrooms I

eventually became a welcome enough visitor that the teacher was willing to permit me to engage in the systematic observational activity the results of which will be reported here.

Equally as important, these teachers, and the very able and devoted head teacher in the school, were willing to spend time talking with me about their work and sometimes helping me define categories for observation that would sensibly reflect the spirit of their undertaking. For teachers working all day in crowded classrooms of 40 or so active and noisy children, devoting their lunch, "break" and after-school times to these conversations represented a real sacrifice: it bespeaks their commitment to their method of education and their willingness to share their views with a "behaviorist" who was initially a mistrusted, if cordially tolerated, visitor.

#### Method of Observation

Since no systematic observation instruments for informal classrooms were available at the time this study was conducted, it was necessary to develop one in the course of the five-week visit. The categories for coding teacher behavior were developed after about two weeks of daily visits to classrooms in the school and extended talks with the head teacher and some classroom teachers.

The categories were intended to reflect the activities observed in these particular classrooms rather than to test any particular theoretical position concerning appropriate or inappropriate teacher behavior. The coding scheme was discussed with each teacher who was observed, and in several cases modified on the basis of the teacher's suggestions. As a result there were some changes

in specific categories used in the course of study. (These will be described where relevant to presentation and interpretation of the data.) The categories used in the final set of observations are listed and briefly defined in Table 1.

Observations were conducted in four different classrooms. Two teachers were observed for one period (approximately two hours) each; two were observed for two such periods. Observation and coding proceeded in three-minute time segments. The observer, carrying a stopwatch, notebook, and pencil, followed the teacher as she moved among the children in order to be able to clearly hear whatever the teacher said. Each utterance (statement or question) by the teacher was coded in one of the categories shown in Table 1.

Each "interaction," composed of one or more utterances to a given child or group of children, was recorded on a single line, moving from left to right. When a new interaction (i. e. , conversation with a new child or group) began, the recording began on the next line. When one interaction "interrupted" another-- i. e. , when the teacher temporarily attended to a new child and then returned to continue the original conversation--the recording of the interrupting interaction was indented. If an interaction was initiated by a child, the first teacher utterance in that interaction was circled. When three minutes had passed, three horizontal lines were drawn below the last interaction in the three-minute interval. Coding was then continued on the next line. A sample coding sheet is shown in Figure 1.

A second observer was not available during the period of observation, and it was thus not possible to conduct an on-site reliability check. Two checks have

been conducted subsequently, however, using audiotape recordings<sup>1</sup> made in the classroom of one of the teachers whose on-site data are reported here. A typed transcript of a portion of the recording was coded independently by the original observer and by an assistant. There was agreement in 108 of 120 utterances coded, or 90 percent agreement. Another portion of the recording was also coded independently by the observer and assistant directly from the tape. This time there was agreement in 100 of 117 utterances coded, or 85 percent.<sup>2</sup>

### Results

#### General Patterns of Interaction

In each of the classrooms in which systematic observation was performed, the same general pattern of teacher behavior was evident. This pattern consists of

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<sup>1</sup> The recording was made by means of a wireless transmitting microphone which the teacher wore around her neck, permitting complete freedom of movement. The signal was picked up on a transistor radio, monitored by the observer in the classroom, and transferred directly to a battery-operated cassette tape recorder. Quality of recording was excellent when the teacher was in the classroom and acceptable even when she moved out onto the playground. The equipment occasioned some comments and questions from the children, which were easily integrated by the teacher into her general conversation, but did not appear to disrupt the flow of class activity in any significant way.

<sup>2</sup> Coding from the tape approximates the on-site conditions in that decisions had to be made quickly with no opportunity to review. However, some of the "context" available to the on-site coder is missing, and this may render the tape coding less reliable than what could be achieved on-site. Two limitations of the reliability checks reported should be mentioned: 1) There was no opportunity to check reliability of observations concerning the number of interactions--i. e., when the teacher shifted attention to a new child. This, however, appears to be a very easy discrimination on-site and would probably not be a source of significant disagreement between observers. 2) More important, no attempt was made to check agreement on the number of utterances emitted--regardless of their category. This potential source of unreliability requires careful attention in any further use of this or a related coding system.

extended substantive conversations with one or a small group of children interspersed with very brief interactions, frequently initiated by children. Children requesting momentary help, information, permission to engage in some activity, or simply recognition of their work, approach the teacher, who repeatedly interrupts her more extended conversations to deal with these momentary needs; she then returns to the interrupted conversation. Between extended conversations the teacher herself may initiate brief interactions, sometimes substantive and sometimes concerned mainly with focussing the child's attention on a particular task.

Data supporting these generalizations are shown in Figure 2 and Tables 2 and 3. Figure 2 shows the frequency of interactions of different length for each of the four teachers observed. Means and standard deviations for lengths of interaction are shown on each graph. As is evident, the four teachers observed had much the same pattern of interaction, i. e., large numbers of short interactions, and great variability in the length of the more extended ones. For purposes of this study, interactions of four or fewer teacher utterances were defined as "brief" interactions. Interactions of five or more teacher utterances were defined as "extended."

Table 2 shows means and standard deviations for number of brief and extended interactions per three-minute time interval for each teacher for each observation period. Although there are differences in variability of rate, the basic pattern is the same for each set of observations: several times as many brief as extended interactions; about two interactions per minute on the average, including both extended and brief.

Table 3 shows the percentage of extended and brief interactions which were child-initiated for each teacher observed. Here there is some variability between teachers suggesting a possible dimension of difference in "teacher style." On the whole, however, there is a tendency toward a high degree of child initiation for brief interactions, while teachers generally initiate more of the extended interactions.<sup>3</sup>

These data on frequency and initiation of teacher-child contacts offer some suggestions as to how it is possible to maintain an adequate degree of organization and teacher guidance in a setting in which children have so many choices and work on such varied activities. On the whole, children's demands for attention are met quickly, particularly when interruptions of more extended conversations are permitted (further discussion of the character of interruptions appears below), and when frequency of contact with children is maintained at a high rate. Using the data in Table 2 one can estimate that if each interaction involved a single child (many of the extended ones actually involved small groups), and if a new child was contacted with each new interaction, then about six different children would experience direct teacher contact in each three-minute interval. At this rate of contact, the teacher could speak at least briefly with every child in a class of 40 once every 20 minutes, if she distributed her attention fairly evenly among the children present.

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<sup>3</sup> This difference was significant for teacher A (A.M.:  $\chi^2 = 16.5$ ,  $df = 1$ ,  $p < .01$ ; P.M.:  $\chi^2 = 5.1$ ,  $df = 1$ ,  $p < .05$ ) and approached significance for teacher B in the A.M. session.

No data were taken in the present study on the extent to which attention was evenly distributed. The observer's impression, reinforced by comments of the teachers observed, is that in any given period certain children receive the bulk of attention while others are largely ignored. If this impression of uneven distribution of attention were to be substantiated, it would pose the following sets of questions: a) Do the same children receive the bulk of the attention from day to day and week to week? If so, b) which children receive the most attention? That is, is the teacher's response dependent heavily on which children approach her, or does she successfully seek to interact with children who are less aggressive or less "teacher-oriented"? Does the teacher attend significantly more to children she "likes" or believes to be more intelligent? Finally, c) what are the effects of attention, or lack of it, on children? Although there are many other educational influences in the classroom--particularly in an informal and individualized classroom--it seems likely that the quantity and quality of teacher attention is a powerful variable in accounting for a child's responses to school and to learning tasks (cf. Meichenbaum, Bowers, & Ross, 1969; Rosenthal & Jacobson, 1968; Rubovitz & Maehr, 1971). Thus the questions just raised are crucial to an understanding of the effects of informal instructional methods on children of different characteristics.

#### Character and Function of Extended Interactions

Between 10 and 19 percent of the teacher's interactions with children are extended conversations, and between 41 and 55 percent of her total number of utterances form part of one of these extended conversations. Thus, in terms of teacher time in the classroom, extended interactions are a dominant feature.

Indeed, these conversations provide the major opportunity for direct instruction by the teacher in the informal classroom. As such, it is important to understand their character and to attempt to assess their function within the total process of the classroom.

Table 4 shows the coding categories into which the utterances forming part of each teacher's extended interactions fell. The most striking feature of these data is the high percentage of questions directed by the teacher to the child. Between 45 and 69 percent of the total number of utterances are questions of one type or another. Of these questions, the vast majority are substantive in nature ( $Q_s$ ). That is, they are questions related to the content of the task the child is working on. A much smaller percentage are personal in nature ( $Q_p$ ), concerned with the child's feelings or with something he or his family has done or is planning to do (a holiday trip, for example). These personal questions occur largely in connection with writing and art work and reflect the teachers' attempts to use these activities as a means of encouraging self-expression in the children as well as for skill development. Finally, there is a group of questions concerned with the "management" of instruction ( $Q_m$ ). These concern where or with whom the child would like to work, what materials he plans to use, and the like. They are closely related to questions coded in the Wh category, which ask a child what he is going to work on, and which are a major means for some teachers of getting children to focus on an activity and of controlling "drifting" behavior.

The precise nature of substantive questions varies, of course, with the kind of work the child is doing. Table 5 lists a number of questions representative

of each major type of work. All questions listed were recorded in the classroom of one of the four teachers under study here, during a separate observation period when no coding was attempted. The following discussion of types of questions refers to the material in Table 5.

Writing. This was a dominant activity in each of the classrooms observed. The children were encouraged first to draw a picture, or series of pictures, to illustrate any theme they were interested in. When completed, the child brought his picture to the teacher and the teacher, usually after engaging the child in conversation concerning his picture, wrote the "story" dictated by the child. The child was then sometimes asked to read what had been written, or to copy the words immediately below the teacher's writing. More advanced children did as much as possible of the original writing themselves, asking for spellings as required, and using a personal "wordbook," or small dictionary consisting of words he himself had requested in the past.

As indicated in Table 5 substantive questions in the writing area were of two major types: a) those concerned with encouraging the child to tell the story--that is, with "drawing out" both language behavior and, where possible, the personal meaning of the experience being represented (questions 1-12); and b) those concerned with problems of writing and spelling (questions 13-22). Occasionally, the conversation surrounding a story prompted extensive discussion of some aspect of the child's personal life (e.g., questions 4, 5). Occasionally, too, there was an attempt to use the story as the basis for engaging the child in some general reasoning or informational exchange (e.g., questions 3, 9).

Art (painting and drawing). Questions based on children's art work largely share the character of the "story" questions in the writing area. Children's art productions were viewed as an occasion for stimulating general language development and for explaining the child's own interests, as indicated by the content of his art work. Sometimes, as in the case of writing, art activities were used as an occasion to prompt general reasoning or information exchange (e.g., questions 24, 28, 30).

Reading. Reading "lessons" generally consisted of the child's reading a book, chosen for his level of reading skill, aloud to the teacher. The teacher helped in the mechanics of reading and asked questions concerning the story. With children not yet able to read on their own, the teacher typically read the story to the child, stopping after each page to question him about the story and pictures. Questions 31-33 are examples of the types of questions used during these reading sessions.

Mathematics. In the school in which these observations were taken, there was very little use of formal mathematics materials. There was a "maths" area in each classroom, with objects to count, measuring instruments, and the like. However, this was typically not a prominent area in the room, and was not richly supplied.<sup>4</sup> Nevertheless, there was considerable attention paid by the teachers to

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<sup>4</sup> This is not typical of other informal schools visited, in which there was usually a substantial amount of material such as Cuisenaire, Unifix, Dienes, etc., together with "assignment cards" setting tasks to work on. This relative lack of such material in the school studied reflected a deliberate decision, expressed on several occasions by the head teacher, to try to relate mathematics learning to general and practical experience rather than to set it off as a special subject of study.

the development of mathematics concepts, using such formal material as was available and attracted the child's attention, and also making use of all of the craft and other activity resources of the classroom. Table 5 lists both the types of activities used in developing mathematics concepts and some of the questions used (numbers 35-56).

Craft and cooking activities (question 57-70). In addition to their function in developing mathematics concepts, these activities were used to stimulate planning activities and to elicit descriptions of work after completion.

Science. The science area in each room typically consisted of some live animals and plants, and some physical science materials such as magnets, prisms, and color paddles. The animals typically attracted the most attention, as indicated by the questions listed (numbers 71-75). On the whole, science materials were not heavily used by the teachers observed as a medium of basic instruction.

Playhouse-dressup area (Wendy House). Although rather prominent in terms of physical space devoted to it, this area seemed to evoke few substantive exchanges between children and teacher in any of the classrooms observed. There were children in and around the Wendy House most of the time, but the teachers apparently had not developed strategies for integrating the activities in these areas into the mainstream of instruction. This being the case, the Wendy House functioned largely as a play area for the children.

The last set of questions in Table 5 (numbers 76-88) are the "management" questions coded  $Q_m$  and Wh. These questions are included in order to

convey a sense of the way in which the teacher, while requiring the child to engage in some directed activity, nevertheless frequently found ways of providing the child with choices concerning how the activities would be carried out and exactly what would be worked on. Although direct instructions to children to carry out certain tasks were more frequent than questions of this type (see D categories in Table 4, and in Table 6 below), the presence of these management questions nevertheless contributed to a sense that the child was expected to make decisions concerning the learning process for himself.

#### Character and Function of Brief Interactions

Brief interactions (four or fewer teacher utterances) comprised 80 to 90 percent of the total number of interactions in the classrooms observed. Table 6 shows the distribution into the various coding categories of utterances forming part of these brief interactions. Comparison with the distributions shown in Table 4 for extended interactions<sup>5</sup> indicates that brief interactions are characterized by relatively fewer questions and more directive statements (D categories). There are also many more utterances concerned with giving or withholding permission (P, NP, and Del categories), and somewhat more praise and negative statements (Pr and N). These differences in types of utterances reflect the relatively great "management" as opposed to "instructional" load borne by the brief interactions. The relatively greater number of uncodable teacher responses (R) in the brief

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<sup>5</sup> A chi-square analysis of frequencies in a 7 (sets of scoring categories: Q including Wh; I; D; P-NP-Del; W-H-Wr-Rd; Pr-N; R) by 2 (extended interactions vs. brief interactions) table yielded a p value of less than .001 ( $\chi^2 = 188.1$ ; df = 6). Specific comparisons discussed derive from inspection of deviations of observed from expected frequencies.

interactions further reflects this character, since utterances coded R were frequently those which had no real "content," but which served to let the child know that the teacher was attending to him.

As has been indicated (Table 3) a large percentage of brief interactions are child-initiated. Tables 7 and 8 indicate the distribution into coding categories of utterances forming part of brief interactions, broken down according to who initiated the interaction. Comparison of these distributions<sup>6</sup> shows that child-initiated interactions contain fewer questions, a great deal more giving of permission, and somewhat more praise and negative statements. This comparison suggests that much of the "management" load is borne by child-initiated interactions while the teacher-initiated ones, although short, are often more "instructional" in intent.

Table 9 shows the number of brief interactions which "interrupt" the more extended interactions, and indicates which of these are teacher- and child-initiated. It is clear that the degree to which interruptions are encouraged or tolerated is different for the individual teachers studied, but that all do permit a substantial number of interruptions. For all teachers, furthermore, interruptions are generally child-initiated, while the non-interruptions (i.e., brief interactions that occur between rather than during extended ones) are more equally divided.<sup>7</sup>

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<sup>6</sup> Chi-square for a 7 (sets of scoring categories) by 2 (teacher-initiated vs. child-initiated) was 71.94; df = 6;  $p < .001$ .

<sup>7</sup> Significant chi-squares were as follows. Teacher A, P.M.:  $\chi^2 = 4.43$ ,  $p < .05$ . Teacher B, A.M.:  $\chi^2 = 15.14$ ,  $p < .01$ ; P.M.:  $\chi^2 = 17.52$ ,  $p < .01$ . Teacher C:  $\chi^2 = 6.34$ ,  $p < .01$ . All tests had one degree of freedom.

This finding, together with comparisons just made of the categories of utterance found in child- and teacher-initiated interactions, suggests that interruptions play a particularly heavy management function in these classrooms. Indeed, it seems likely that a teacher who did not respond to children's requests for attention, even when she had to interrupt another activity to do so, would not maintain an adequate degree of "control" over the classroom.

#### Discussion

The data reported here have permitted a descriptive characterization of certain features of informal teaching and have provided the basis for clarifying how some key instructional and management functions are met in the open classroom. It remains now to consider the social and intellectual consequences of the teaching styles described, and their implications for the kind of learning that is likely to take place in informal settings.

As has been noted, the most striking feature of the data is the predominance of questions from the teacher to the child. The likely effects of teaching through questioning are several. Perhaps most important, the teacher, as she questions, "models" an attitude of inquiry and investigation toward all events in the environment. Very probably, many children begin to imitate this questioning; certainly such an outcome is among the goals frequently espoused by proponents of informal teaching. At the very least, it is a hypothesis worth serious investigation, such investigation undoubtedly requiring observation of children's behavior in the classroom, and perhaps outside, over extended periods of time.

A second effect of questioning, most evident in the "story" questions surrounding writing and art work, is probably to communicate to the child a sense

of interest in his communicative efforts. The effects of such an expression of interest ought to be seen not only in a greater tendency on the part of the child to engage in communicative acts, but also in generally higher self-evaluations. Again, these are effects frequently claimed for informal teaching, but there is little "hard" evidence for them; they deserve serious attempts at evaluation.

Finally, the use of questions as a means of fulfilling the management functions of the classroom (particularly the  $Q_m$  and Wh questions) contributes to a sense that children must make choices--and commitments--concerning both the content and manner of their work. Although there were generally fewer questions of this type than there were direct task setting statements (D categories), the presence of even a small percentage of management oriented questions probably reflects the informal educator's concern for helping children to take responsibility for their own learning activities--thus becoming "autonomous" rather than externally directed learners. Here again, research assessing the long-term effects of engaging children in active choice behavior is needed, together with investigation of a still wider range of techniques for encouraging and promoting self-directed learning.

As this discussion has suggested, the informal teaching behaviors described here have features which seem especially well-suited to developing attitudes of inquiry, strong self-evaluation, and self-direction in children. To what extent do these same teaching styles contribute to the acquisition of basic skills and concepts, such as reading and mathematics? Since there are no formal means of assuring that the child works on tasks suited to his current level of development in

any particular area, the child's acquisition of basic skills in an informal environment depends on a combination of two factors: a) the extent to which the child is able to extract from a complex and "distracting" environment those tasks that optimally "stretch" his current repertoire of skills and concepts--i. e. , the extent to which he can "program" his own learning; and b) the extent to which the teacher, on the basis of informal observation and evaluation and her own knowledge of the structure of the subject-matter, can guide the child to appropriate tasks. In addition, the informal method of teaching depends upon a subtle blending of "self-motivated" learning on the part of the child, the setting of expectation for performance by the teacher, and both peer and teacher reinforcement of intellectual effort.

The data presented here do not permit any direct assessment of how successfully these factors interact in the classrooms studied. Nor, for that matter, is there a great deal of detailed research from other sources, particularly on children's ability to program their own learning in various kinds of environments, a capacity that is very likely related to aspects of self-motivation, as has been implied in the writings of Montessori, Piaget, Hunt, and others. Nevertheless, it seems important to raise these questions in the present context, since they suggest the kinds of research that will be needed if we are to develop and extend ways of simultaneously maximizing skill development and the attitudes of involvement and responsibility in learning described above.

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TABLE 1

Categories for Observation of Teacher Behavior in an Open Classroom

|                |                                                                                                                                                                                              |
|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Q <sub>m</sub> | A question from the teacher directed to one or more children. Subscripts indicate content: M = "management" (What kind of paper do you want? When do you want to finish? Where is the tape?) |
| Q <sub>p</sub> | P = "personal" (Did you go with your brother? Did your mother like it? Whose room is being painted?)                                                                                         |
| Q <sub>s</sub> | S = "substantive" (How many over here will balance these? Which word says "little"? What letter is missing?)                                                                                 |
| Wh             | Teacher asks child <u>What</u> he is going to do.                                                                                                                                            |
| D <sub>m</sub> | A direction to the child to do something or work on a particular task. Subscripts have same meaning as for Q - code.                                                                         |
| D <sub>p</sub> |                                                                                                                                                                                              |
| D <sub>s</sub> |                                                                                                                                                                                              |
| I <sub>m</sub> | Teacher gives information to child. Subscripts have same meaning as for Q - code.                                                                                                            |
| I <sub>p</sub> |                                                                                                                                                                                              |
| I <sub>s</sub> |                                                                                                                                                                                              |
| Pr             | Teacher praises child or child's work.                                                                                                                                                       |
| N              | Negative Statement to child (That isn't good. Stop that.)                                                                                                                                    |
| W              | Teacher writes or spells a word for child (when child is writing); or teacher reads a word for child when child is reading.                                                                  |
| H              | Teacher helps child (implies physical aid, as in crafts, art, moving furniture, finding things, etc.).                                                                                       |
| Wr             | Teacher writes from child's dictation.                                                                                                                                                       |
| Rd             | Teacher reads a story to child.                                                                                                                                                              |

TABLE 1 continued

|     |                                                    |
|-----|----------------------------------------------------|
| P+  | Teacher gives permission to child.                 |
| NP  | Teacher does not grant permission when child asks. |
| Del | Teacher asks child to wait.                        |
| R   | Unclassifiable response.                           |
| A   | Teacher speaks to another adult.                   |



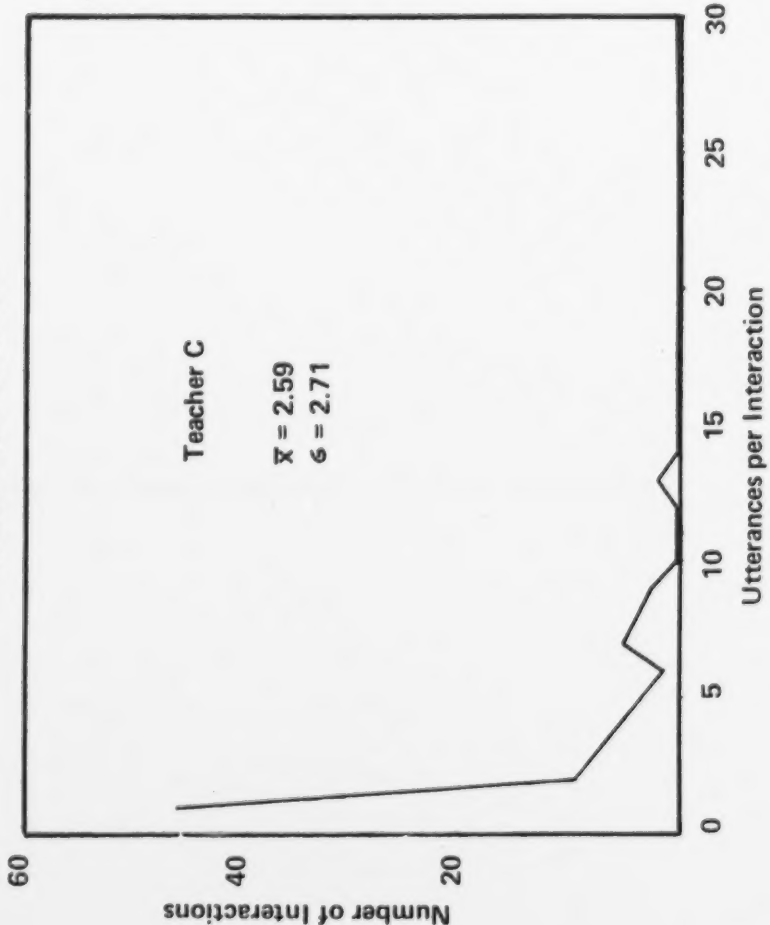
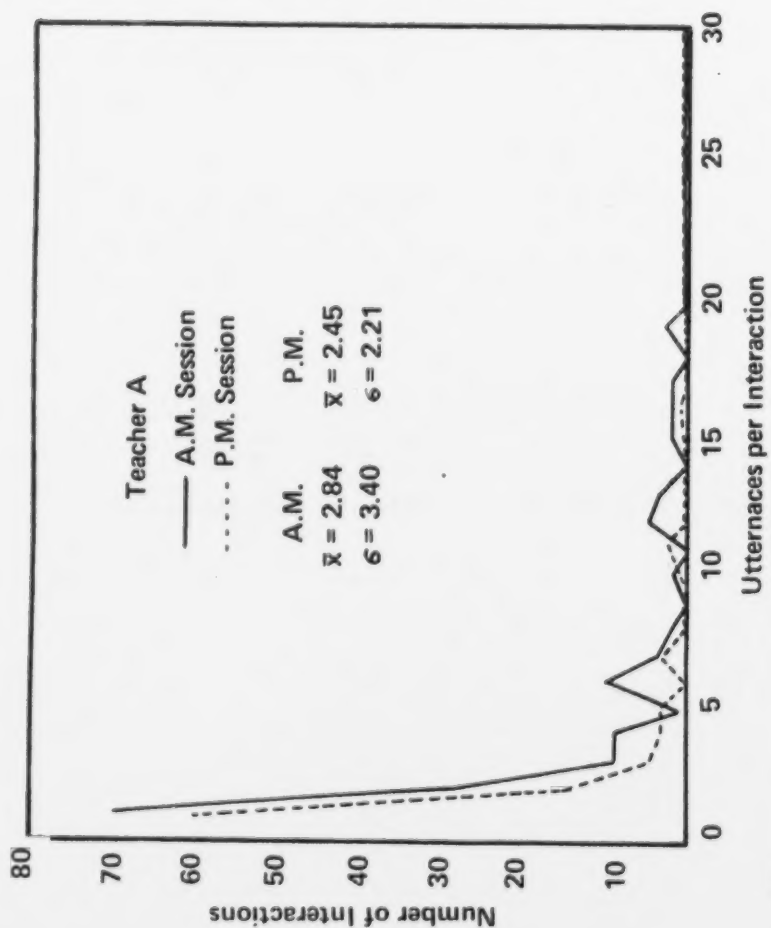
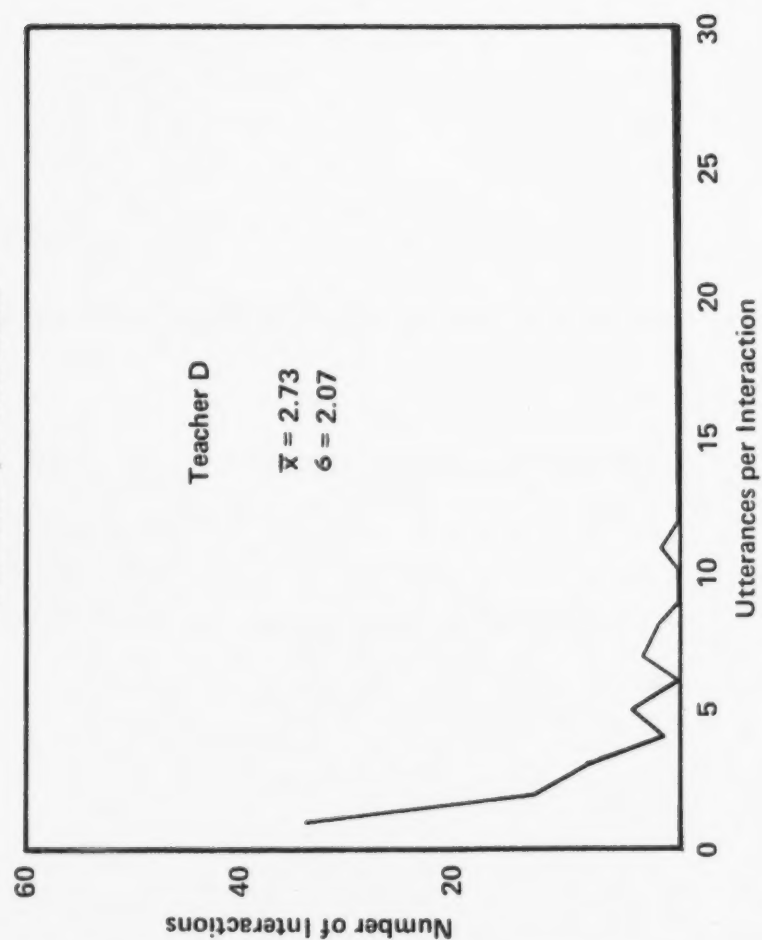
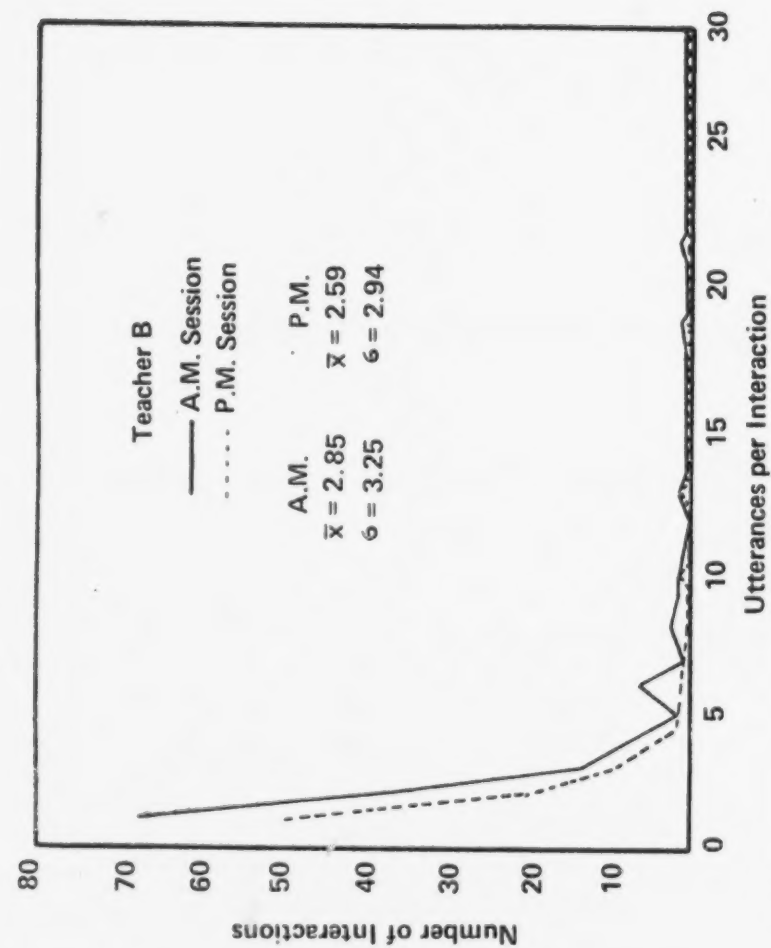


Figure 2: Utterances per Interaction vs. Number of Interactions

TABLE 2

Mean Number of Brief and Extended Interactions in Each Three-Minute Interval

| Teacher |      | Number of Three-Minute Intervals Observed |          | $\bar{X}$ | SD   |
|---------|------|-------------------------------------------|----------|-----------|------|
| A       | A.M. | 22                                        | Extended | 1.04      | 2.23 |
|         |      |                                           | Brief    | 5.09      | 2.76 |
|         | P.M. | 11                                        | Extended | .73       | 1.49 |
|         |      |                                           | Brief    | 3.56      | 1.97 |
| B       | A.M. | 23                                        | Extended | 1.17      | .89  |
|         |      |                                           | Brief    | 4.82      | 3.02 |
|         | P.M. | 14                                        | Extended | .93       | .61  |
|         |      |                                           | Brief    | 5.57      | 4.31 |
| C       |      | 14                                        | Extended | 1.14      | .77  |
|         |      |                                           | Brief    | 4.78      | 2.04 |
| D       |      | 7                                         | Extended | 1.42      | .78  |
|         |      |                                           | Brief    | 8.28      | 3.65 |

TABLE 3  
Percent of Interactions Which Were Child-Initiated

| Teacher |      |          | Number of<br>Teacher-Initiated<br>Interactions | Number of<br>Child-Initiated<br>Interactions | Percent<br>Child-<br>Initiated |
|---------|------|----------|------------------------------------------------|----------------------------------------------|--------------------------------|
| A       | A.M. | Extended | 18                                             | 5                                            | 21.73                          |
|         |      | Brief    | 34                                             | 78                                           | 69.64                          |
|         | P.M. | Extended | 7                                              | 2                                            | 22.22                          |
|         |      | Brief    | 27                                             | 55                                           | 67.07                          |
| B       | A.M. | Extended | 16                                             | 11                                           | 40.74                          |
|         |      | Brief    | 49                                             | 65                                           | 57.01                          |
|         | P.M. | Extended | 7                                              | 7                                            | 50.00                          |
|         |      | Brief    | 42                                             | 50                                           | 54.34                          |
| C       |      | Extended | 8                                              | 8                                            | 50.00                          |
|         |      | Brief    | 24                                             | 43                                           | 64.17                          |
| D       |      | Extended | 6                                              | 4                                            | 40.00                          |
|         |      | Brief    | 23                                             | 36                                           | 61.01                          |

TABLE 4

Percent of Utterances in Each Category for Extended Interactions

| Teacher        | A     |       | B        |       | C     | D     |
|----------------|-------|-------|----------|-------|-------|-------|
|                | A.M.  | P.M.  | A.M.     | P.M.  |       |       |
| Q <sub>s</sub> | 53.55 | 65.40 | [56.35*] | 35.04 | 52.47 | 44.11 |
| Q <sub>p</sub> | 5.68  | 3.56  |          | 6.83  | 2.47  | —     |
| Q <sub>m</sub> | 2.83  | 1.17  | —        | 1.70  | 2.47  | —     |
| Wh             | 1.89  | 1.17  | 4.54     | 4.27  | 1.64  | 1.47  |
| I <sub>s</sub> | 5.21  | 5.94  |          | 10.24 | 5.74  | 22.05 |
| I <sub>p</sub> | —     | —     | [16.35*] | .85   | —     | —     |
| I <sub>m</sub> | 1.42  | —     |          | —     | —     | —     |
| D <sub>s</sub> | 11.84 | 7.13  | —        | 12.82 | 12.21 | 2.94  |
| D <sub>p</sub> | —     | —     | —        | —     | —     | —     |
| D <sub>m</sub> | 2.36  | —     | —        | 1.70  | 5.74  | 2.94  |
| P              | 1.89  | 1.17  | —        | —     | —     | —     |
| NP             | —     | —     | —        | —     | —     | —     |
| Del            | —     | —     | —        | —     | —     | —     |
| W              | 2.72  | 2.36  | 2.72     | 4.27  | —     | —     |
| H              | 5.21  | —     | 4.09     | 2.56  | 7.39  | 1.47  |
| Wr             | —     | —     | —        | —     | 2.47  | 4.41  |
| Rd             | —     | —     | —        | 2.56  | —     | —     |
| Pr             | .94   | 5.94  | 2.27     | 4.27  | —     | 8.82  |
| N              | —     | —     | .90      | —     | —     | —     |
| R              | 7.09  | 5.92  | 5.45     | 8.54  | 2.46  | 11.76 |
| A              | —     | —     | —        | —     | —     | —     |

\*The s, p, and m subscripts were not yet being used during the observation period.

TABLE 5

Sample Teacher Questions

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WRITING

Story questions

- (1) Who usually wears a crown?
- (2) Do they wear it all the time?
- (3) Where do the king and queen live?
- (4) Have you ever been there? (to the palace in London)
- (5) Have you got a dog? What do you call him?
- (6) A car goes in there, does it?
- (7) A man lives in the house, is it?
- (8) A car bust down, did it?
- (9) Then how are you going to make the tire mended again?
- (10) That's a man, is it? And those are his boots?
- (11) That's a giant doing all these footsteps, then?
- (12) What's happening here?

Writing and Reading questions

- (13) Which word is it?
- (14) Which word is longer? What does it begin with?
- (15) What does it say?
- (16) You tell me which word is "gold."
- (17) What does all this say that you've written?
- (18) Can you read it to me?
- (19) What shall I write?
- (20) What word is it you want?
- (21) Which letter did you miss out?
- (22) How do you always spell "ing"?

ART (drawing and painting)

- (23) Who is this?
- (24) Who is bigger, mummy or daddy?
- (25) How many pictures can you get on it?
- (26) Put some flowers and trees around the house.
- (27) Is she smiling?
- (28) Is he a big man or a little man?
- (29) Can you draw a picture of somebody using an axe?
- (30) How many houses have you got here?

TABLE 5 continued

READING

- (31) Where have they gone to?
- (32) Whose house are they in?
- (33) What is the boy's name?
- (34) What do you think she says?

MATHEMATICS

Counting materials

- (35) How many nails?
- (36) How many corks?
- (37) Do you know how many rows altogether?
- (38) And how many rows has each row got?
- (39) How many lots of ten have you got?
- (40) Count how many people are playing.

Measuring and weighing materials

- (41) So he took how many minutes then? (Children are using a stopclock)
- (42) Which is wider?
- (43) Is that the right length?
- (44) Which side do you want to put the plasticene in?
- (45) What will happen if you put more in?
- (46) Suppose you have a stone. Would you need more plasticene or the same? Try it.

Other materials

- (47) How many pages will that make if we fold it? (writing)
- (48) How many houses have you got here? (drawing)
- (49) Is it as long as that piece of material? (sewing)
- (50) Which is longer, this brick or this brick? (blocks)
- (51) Which one do you think has more water in it? (cooking)
- (52) Who is bigger, mummy or daddy? (writing)
- (53) Which does feel heavier? (water-play)
- (54) Which do you think will feel heavier now? (water-play)
- (55) How many layers of materials do you have? (sewing)
- (56) Who knocked down more? (skittles game)

TABLE 5 continued

CRAFTS AND COOKING

Cooking

- (57) What did you put in to make it that color?
- (58) What have you got to do with tins to stop cakes from sticking?
- (59) Why do you make them greasy?
- (60) What must you do before you eat it?
- (61) What do you need to bring?
- (62) What sort of flour for ordinary buns?
- (63) They help to make the cakes do what?

Craft

- (64) What have you put in there to stuff it? (sewing)
- (65) Do you know what shape this is? (carpentry)
- (66) How many arches have you got? (blocks)
- (67) How do I know that those handprints belong to you?
- (68) What kind of stitch will you make? (sewing)
- (69) What will happen if I don't tie tightly enough? (tie-dying)
- (70) What can you do (if wood is too heavy for you to carry)?

SCIENCE

- (71) What is it he's eating?
- (72) Has he got teeth?
- (73) Where is he (a bird) going to live?
- (74) Do you know what a mongrel is?
- (75) What is he going to do before he can eat it?

MANAGEMENT

Qm Questions

- (76) Who would like to work with Keith on the paints?
- (77) Would you come here, please, and tell me what work you're going to do?
- (78) Have you finished playing with the bricks?
- (79) Are they really mixed up (the paints), Alan?
- (80) How many are playing with it?
- (81) Couldn't you build it up again for him?
- (82) Do you want to finish it now or later?
- (83) Who's going to go first?
- (84) Can you find two bits of paper like that or will one be enough?

TABLE 5 continued

Wh Questions

- (85) What did you want it for?
- (86) What are you going to do this time?
- (87) What have you got here?
- (88) What are you going to work with?

TABLE 6  
Percent of Utterances in Each Category for Brief Interactions

| Teacher        | A     |       | B        |       | C     | D     |
|----------------|-------|-------|----------|-------|-------|-------|
|                | A.M.  | P.M.  | A.M.     | P.M.  |       |       |
| Q <sub>s</sub> | 23.86 | 13.53 |          | 14.72 | 15.23 | 14.14 |
| Q <sub>p</sub> | 1.70  | .84   | [20.85*] | 2.32  | —     | 1.11  |
| Q <sub>m</sub> | 1.70  | 4.24  |          | 6.97  | 2.85  | 3.03  |
| Wh             | 1.70  | —     | 6.59     | 4.65  | 1.90  | 5.05  |
| I <sub>s</sub> | 4.54  | .84   |          | 9.30  | 1.90  | 13.32 |
| I <sub>p</sub> | .56   | —     | [8.88*]  | .77   | —     | —     |
| I <sub>m</sub> | 1.70  | .84   |          | 6.20  | —     | 3.03  |
| D <sub>s</sub> | 3.40  | 8.48  |          | 3.87  | 19.04 | 7.07  |
| D <sub>p</sub> | 1.13  | .84   | [25.26*] | —     | —     | —     |
| D <sub>m</sub> | 9.65  | 19.39 |          | 11.62 | 13.33 | 9.09  |
| P              | 11.93 | 12.72 | 6.04     | .77   | 6.66  | 11.01 |
| Np             | .56   | —     | —        | .77   | —     | —     |
| Del            | 2.27  | .84   | —        | —     | —     | —     |
| W              | .56   | 1.81  | 1.09     | 11.62 | .95   | —     |
| H              | 4.54  | 2.52  | 6.04     | 5.42  | 2.85  | 4.44  |
| Wr             | 3.97  | —     | —        | —     | —     | —     |
| Rd             | .56   | 2.05  | —        | —     | —     | —     |
| Pr             | 1.70  | 8.48  | 3.29     | 3.85  | 5.51  | 13.13 |
| N              | 4.54  | 1.68  | .54      | —     | 2.85  | 5.05  |
| R              | 13.06 | 16.99 | 18.68    | 14.72 | 25.70 | 13.63 |
| A              | 4.54  | .84   | 2.19     | .77   | .95   | —     |

\*The s, p, and m subscripts were not yet being used during this observation period.

TABLE 7  
Percent of Utterances in Each Category for Teacher-Initiated  
Brief Interactions

| Teacher        | A     |       | B        |       | C     | D     |
|----------------|-------|-------|----------|-------|-------|-------|
|                | A.M.  | P.M.  | A.M.     | P.M.  |       |       |
| Q <sub>s</sub> | 33.96 | 11.90 | [21.88*] | 18.75 | 31.70 | 17.39 |
| Q <sub>p</sub> | —     | 2.38  |          | 4.16  | —     | —     |
| Q <sub>m</sub> | 1.88  | 9.52  |          | 10.41 | 2.43  | 4.34  |
| W <sub>h</sub> | 1.88  | —     | 10.95    | 10.41 | 4.87  | 8.69  |
| I <sub>s</sub> | 9.43  | 4.76  | [6.83*]  | —     | 4.87  | 8.68  |
| I <sub>p</sub> | 1.88  | —     |          | —     | —     | —     |
| I <sub>m</sub> | 1.88  | —     |          | 4.16  | —     | —     |
| D <sub>s</sub> | 1.88  | 7.14  | [30.12*] | 10.41 | 19.51 | 17.39 |
| D <sub>p</sub> | —     | —     |          | 2.08  | —     | —     |
| D <sub>m</sub> | 16.98 | 35.71 |          | 16.66 | 17.07 | 8.69  |
| P              | —     | —     | 1.36     | —     | 2.43  | —     |
| NP             | 1.88  | —     | —        | —     | —     | —     |
| Del            | —     | 4.76  | —        | —     | —     | —     |
| W              | —     | —     | —        | 2.08  | —     | —     |
| H              | —     | 7.14  | 6.84     | 6.25  | 4.87  | 13.04 |
| Wr             | —     | —     | —        | —     | 2.43  | 4.34  |
| Rd             | 1.88  | —     | —        | —     | —     | —     |
| Pr             | —     | 7.14  | 2.73     | 4.16  | —     | 4.34  |
| N              | 5.66  | 4.76  | 1.36     | —     | 4.87  | —     |
| R              | 21.74 | 4.76  | 17.80    | —     | 4.87  | 13.03 |
| A              | —     | —     | —        | —     | —     | —     |

\*The s, p, and m subscripts were not yet being used during this observation period.

TABLE 8

Percent of Utterances in Each Category for Child-Initiated

Brief Interactions

| Teacher        | A     |       | B        |       | C     | D     |
|----------------|-------|-------|----------|-------|-------|-------|
|                | A.M.  | P.M.  | A.M.     | P.M.  |       |       |
| Q <sub>s</sub> | 18.80 | 14.66 |          | 13.57 | 6.24  | 13.04 |
| Q <sub>p</sub> | —     | —     | [20.54*] | 1.23  | —     | 1.44  |
| Q <sub>m</sub> | 1.70  | 1.33  |          | 6.16  | 1.56  | 2.89  |
| W <sub>h</sub> | .85   | —     | 3.73     | 1.23  | —     | 2.89  |
| I <sub>s</sub> | 4.26  | 1.33  |          | 9.87  | —     | 14.48 |
| I <sub>p</sub> | —     | —     | [10.27*] | 1.23  | —     | —     |
| I <sub>m</sub> | 2.55  | —     |          | 6.17  | —     | 2.88  |
| D <sub>s</sub> | 6.82  | 9.33  |          | 2.46  | 18.75 | 2.89  |
| D <sub>p</sub> | —     | —     | [21.49*] | —     | —     | —     |
| D <sub>m</sub> | 6.82  | 10.66 |          | 4.93  | 10.93 | 10.14 |
| P              | 17.09 | 20.00 | 9.34     | 1.23  | 9.37  | 14.49 |
| NP             | .85   | 10.66 | —        | —     | 4.68  | 1.44  |
| Del            | .85   | 5.33  | —        | —     | —     | —     |
| W              | .85   | 2.66  | 1.86     | 17.28 | 1.56  | —     |
| H              | 6.83  | —     | 5.60     | 4.93  | 1.56  | 1.44  |
| Wr             | —     | —     | —        | —     | 9.37  | 2.89  |
| Rd             | —     | —     | —        | 1.23  | —     | —     |
| Pr             | 2.56  | 9.33  | 3.73     | 3.70  | 10.93 | 15.94 |
| N              | 3.41  | —     | —        | —     | —     | 5.79  |
| R              | 18.78 | 13.33 | 19.62    | 23.45 | 23.43 | 7.24  |
| A              | 6.83  | 1.33  | 3.73     | 1.23  | 1.56  | —     |

\*The s, p, and m subscripts were not yet being used during this observation period.

TABLE 9

## Timing of Teacher- and Child-Initiated Brief Interactions

| Number of Interactions |                   |                   |                   |                 |       |    |
|------------------------|-------------------|-------------------|-------------------|-----------------|-------|----|
| Teacher                |                   | Teacher-Initiated |                   | Child-Initiated | Total |    |
| A                      | A. M.             | Interruptions*    | 18                | 32              | 50    |    |
|                        |                   | Non-interruptions | 32                | 33              | 65    |    |
|                        | P. M.             | Interruptions     | 4                 | 19              | 23    |    |
|                        |                   | Non-interruptions | 26                | 31              | 57    |    |
|                        | B                 | A. M.             | Interruptions     | 8               | 52    | 60 |
|                        |                   |                   | Non-interruptions | 25              | 26    | 51 |
| P. M.                  |                   | Interruptions     | 7                 | 43              | 50    |    |
|                        |                   | Non-interruptions | 19                | 12              | 31    |    |
| C                      |                   | Interruptions     | 10                | 32              | 42    |    |
|                        |                   | Non-interruptions | 14                | 12              | 26    |    |
| D                      | Interruptions     | 3                 | 19                | 22              |       |    |
|                        | Non-interruptions | 13                | 24                | 37              |       |    |

\*Interruptions are interactions which temporarily divert the teacher's attention from an extended conversation with another child.